Educ.

OCT 16 1958

DURHAM, N. C.

EDUCATIONAL RESEARCH BULLETIN: ERB

OCTOBER 8, 1958

COLLEGE OF EDUCATION
THE OHIO STATE UNIVERSITY

Vol. XXXVII, No. 7

EDUCATIONAL RESEARCH BULLETIN

(Entered in the United States Patent Office)

R. H. ECKELBERRY.....*Editor*
SHIRLEY LIPSON.....*Assistant Editor*

PUBLISHED BY THE BUREAU OF EDUCATIONAL RESEARCH AND SERVICE, OHIO STATE UNIVERSITY, FOR THE SCHOOLS OF OHIO. EDITORIAL AND BUSINESS OFFICES, ROOM 173, ARPS HALL, COLUMBUS 10, OHIO

ANNUAL SUBSCRIPTION ONE DOLLAR ($1) TO PERSONS LIVING OUTSIDE OHIO

CONTENTS

The University, the High Schools, and the Superior Student 169
W. TODD FURNISS, *Ohio State University*

Talent versus Performance..... 172
CHESTER ALEXANDER, *Westminster College*

The Development of Pupil-Growth Criteria in Studies of Teacher Effectiveness..... 178
HAROLD E. MITZEL AND CECILY F. GROSS, *College of the City of New York*

Johnny Appleseed: a Pilot Study of a Story-Centered Activity Program..... 188
META NEWMAN, *Yellow Springs, Ohio*

Editorial Comment..... 193

THE EDUCATIONAL RESEARCH BULLETIN is published monthly except during June, July, and August. Entered as Second-Class Matter, February 9, 1922, at the Post Office at Columbus, Ohio, under the Act of August 24, 1912. Accepted for mailing at specified rates of postage provided for in Section 1103, Act of October 3, 1917, authorized February 21, 1922.

Educational Research Bulletin

OCTOBER 8, 1958
Vol. XXXVII, No. 7

The University, the High Schools, and the Superior Student

By W. TODD FURNISS

LAST April Novice G. Fawcett, president of Ohio State University, met with the superintendents of the school systems in Franklin County. The meeting was the result of a growing realization on the part of Mr. Fawcett and members of the faculty that there were unexploited areas of co-operation between the University and the high schools which, if developed, could bring benefits to the superior student. True, such a student was already eligible for some existing programs once he was enrolled in the University. For example, in the College of Arts and Sciences he might receive credit for courses on the basis of proficiency examinations, he could enter the College Honors Program and with the help of a faculty adviser make a curriculum tailored to his competence and interest, and if he needed financial help he could get it through the office of Student Financial Aids. But these advantages were available only after he had come to the University and only if he were made aware of their existence. It seemed possible that the University might be overlooking other advantages which might be provided in co-operation with the schools.

Three areas to be explored were suggested to the superintendents. First, it was pointed out that very little use had been made of the existing rules governing proficiency examinations. The rules provide that a student may earn up to 30 quarter hours of credit for college courses by taking and passing, with an *A* or *B*, examinations equivalent to final course examinations. Whether from ignorance of the rule or, as some suggested, reluctance to get into more advanced and therefore harder courses, qualified students have not generally made much use of this opportunity. It might be that with encouragement from the schools, they would. The University offered to reconsider any of its rules in

regard to proficiency examinations should it appear to the schools that changes were in order.

The second program available in which high schools and the University might co-operate is the Advanced Placement Program. At present, only seven high schools in Ohio are participating regularly in this venture. The University offered to do what it could to help the schools set up such a program. At the time of the meeting, those of us at the University were indeed uncertain about the kind of help we could give. We hope that by the time the schools can move we will be better educated than we are and can give positive assistance.

The third suggestion made by the University grew out of an informal experiment conducted the year before in which four mathematics students from the University High School were admitted to college mathematics courses in which they performed very creditably. The University School asked if the experiment might be put on a more regular basis. To consider the possibilities, President Fawcett appointed a committee which suggested that for a period of two or three years, upon recommendation of a high-school principal and approval by the department concerned, a superior student might be admitted to a University course to do the same work and take the same examinations as those regularly enrolled. The program got under way in the Summer Quarter with eleven students from nine high schools enrolled in ten courses in eight different departments. Informal records are being kept in the Arts College Office and the student who successfully completes the course may expect to get credit for it if he subsequently enrolls in the University. It is much too early to tell how the experiment will work out. Certainly the faculty and parents with whom I have talked have been very enthusiastic.

THE meeting with the superintendents was held shortly before the end of the academic year. We hope that as the new year starts we will be able to find other ways in which the University can aid the best students to work profitably and at their capacity. Within the University we can work on our Honors Programs and our methods of recruiting for them; we can be more alert to spot the good students when they show up in classes and see that they get the maximum opportunities; we can institute more advanced sections of the regular courses; and we can try to discover new

ways of achieving our goals. What the schools might do we cannot prescribe. To single out one as a model is probably unfair, since circumstances vary from school system to school system; yet the accomplishments of Don D. Longnecker, principal of Fairview High School in Dayton, seem to the University committee to set an enviable standard. The committee accepted Mr. Longnecker's invitation to visit his summer program for superior students—eighth grade through postgraduate—in July and were much impressed by what they saw in all the classrooms. Space does not allow a review of his program. I feel that its greatest significance lies in the seminal nature of what is being done. Bring together in one school for a period of concentrated study the best students and the best teachers from the entire school system and inevitably the values developed during that brief program will influence work done in all the grades in all the schools. As with any change that upsets established practices, there will be opposition from those who honestly doubt the propriety of what is being done and from those who are simply used to the old ways. But once we have recognized that we are not giving the best to the best students, we cannot in good conscience let academic and administrative tradition prevent us from trying to improve our offerings.

What I have reported here is not a full-blown program, certain of its goals, with its methods fixed by printed forms, and with its virtues certified by a foundation grant. It is like all efforts at improvement of what is already good: a groping, uneasy venture which will require that all of us involved remember the main point, that we could be doing better. For this reason the committee would be happy to receive from readers of the BULLETIN any suggestions that they may have which would help to further the program.

EDITOR'S NOTE.—The Editor concurs in this invitation to readers of the BULLETIN to pass along to Mr. Furniss' committee any questions, comments, or suggestions they may have. As the program develops, we hope to present additional articles about it.

Talent versus Performance

By CHESTER ALEXANDER

Two terms have been appearing increasingly often in the literature of higher education, in faculty discussions, and in the popular press—*superior student* and *gifted student.* Frequently they are used as if they were interchangeable, or at least as if they held nearly identical meanings; yet upon careful examination it becomes clear that there is a difference, a difference which is of major importance to all educators who are interested in the gifted students in their classrooms.

The two groups are not necessarily made up of the same students but it is possible for a student to be included in both groups; however, this does not happen very often. What are the distinctions between these two terms? First, the term *superior student* refers to performance, chiefly the marks that the student gets in the classroom. If his marks are sufficiently high that his name appears on the honor list, he may be classed as superior. If, in addition, he turns in assigned work promptly, attends classes regularly, reads the textbook ahead of daily discussions, does extra reading, and asks thoughtful questions in class, he may be sure that he is in that group. Not all of these traits must be present to distinguish the superior student and, moreover, we are not justified in saying that any or all of them also mark the student as a gifted student.

In a recent study of thirty students who had maintained average marks of 93 for two years and were honored as "superior students," the data showed that their intelligence quotients ranged from the 45th to the 95th centile, with a mean intelligence quotient considerably lower than that of 60 other students in the same college. They were listed as "superior" because they had maintained a high scholastic average. Undoubtedly they had performed as "superior students" but one questions whether they all should be classed as "gifted," in terms of intellectual excellence. The distinction is important not only so that we may agree on what we are talking about but also so that we can design teaching methods which will bring the gifted into the classification of superior students also.

Second, in the attempt to distinguish between "superior student" and "gifted student" one might also ask if tests of mental

ability are the bases of each of the terms. When we speak of the "gifted" we are at liberty, of course, to ask what gifts we have in mind. There are numerous natural gifts, but those to which the term evidently refers are aptitudes for learning and for creative thinking and a fertile imagination, all of which could function well in formal educational circles. These are considered to be innate capacities which enable their possessors to do much better than the average student in solving intricate problems and treating their derivations objectively.

Various tests are given to the thousands of youth who enter the fifteen hundred accredited colleges and universities in the United States each year, and the scores are divided into percentile classes. Those who score above the median are also classified as above "average." Are they gifted, or should we move the minimum up higher, say beyond the 75th percentile line? This still may not be high enough, for some would like it at 90, or even 95.

IN ORDER to explore these attitudes regarding the difference between superior and gifted students a set of questionnaires was sent to, and replies received from, 121 colleges and universities. Among the more important data gained from the replies were the following. When asked if their schools have a large number of gifted students, 66 per cent said "yes," 15 per cent said "no," and 19 per cent gave varied replies such as "about one-third of the student body," "we have no reliable statistics," or "we do not know." Certainly there is ambiguity regarding the meaning of "a large number," as well as "gifted students," but the reason for not being more precise was that we want the definitions to be collectively built up.

In replying to the question, "Are the faculty informed who the gifted students are?" one-third of the colleges stated that their teachers are "not informed." Some stated that the professors may find out "if they take the initiative in inquiring." Clearly there is no uniform movement under way to identify the gifted students in many colleges.

It becomes evident that a fairly small percentage of professors know who the students are in their classes who have high intelligence quotients. Further, one-half of these schools do not tell such students that they have made high scores on intelligence tests. Unless they are told, how can they visualize themselves as different from their classmates?

The 121 colleges and universities investigated have over 250,000 students enrolled. According to estimates given by these schools, about 10 per cent, or 25,000, of their youth are classified as gifted, yet a large proportion of them are not so identified for their faculties or for themselves. Ninety-six per cent of the schools state that they rely in part on psychological tests to identify gifted students; 85 per cent rely on high-school transcripts, 66 per cent on interviews, and 45 per cent on letters of recommendation. Certainly some of the schools use two or more of these methods, but one wonders if they are adequate to identify the estimated 25,000 highly gifted youth who enter those colleges yearly. Other methods of identification include:

1. *Faculty reports which show unusual student potential.*—This method would work well if the student demonstrates the potential, but some of the gifted do not exhibit their talents sufficiently to get on honor lists. Some of them receive only average marks.

2. *Winners in competitions and at science fairs.*—Whether such competitions expose the gifted student, or merely the industrious, one cannot immediately predicate.

3. *Facts revealed during freshman orientation.*—This is a promising method if it includes sufficient attention to individuals, by persons who are interested in finding the gifted. If it is aimed merely at a quick college adjustment, many of those with high ability may be unnoticed.

4. *Campus leadership.*—Campus leadership is said to expose some of the gifted (it occasionally does), but it is slow in developing and in many colleges there are not as many opportunities for group leadership as there are gifted students. In addition, Freshmen are ordinarily limited in the number of chances they have to become leaders. And again, some of the brightest students are retiring and hence not selected as leaders.

5. *Freshman honor societies.*—In some cases a whole semester passes before Freshmen are elected to honoraries, and often the choice of members is based on marks rather than native ability. Because the latter is not so easily seen, the gifted may remain fairly inconspicuous.

6. *Proficiency tests in mathematics and English.*—Proficiency tests, which are usually given during the first week in college, may reveal a background of good high-school training. Frequently

the scores are not compared with the student's intelligence rating. Moreover, in some schools the tests are given by different departments and the test results may be used only for sectioning students.

7. *Other comments.*—Such remarks as, "casual and accidental comments by faculty members," "the word gets around," and "we have no means of identification before they arrive at the university" reveal the varied attitudes toward identification of those youth who have naturally keen minds.

Such evidence indicates that efforts to spot the brightest students are not well organized, and occasionally when identification does take place it is almost completely on the basis of class marks. This leaves little room for the very intelligent boy or girl with a poor high-school preparation, or for the one who has ridden along easily without making much use of the talent that nature has given.

Another observation about the differences between gifted and superior students is that the latter seem to adjust readily to college life early in their college career. The gifted student may not be so adept in making easy social contacts. He may be shy, and possibly some of the gifted are not very anxious to develop friendships quickly. The teachers of the gifted student may be dissatisfied with his class participation, since it does happen that few of the faculty know the students well.

We may visualize a non-metric scale with the recognized superior student at one end, well known and praised for his good marks. At the other end is a highly gifted student, bored with commonplace studies, somewhat aloof, not proud, not well known, possibly ill at ease in class, or even a bit rebellious over some of the demands which he is not meeting. We also recognize that there are numerous intervening points which tend to obscure the two extremes, with the result that the superior student is more conspicuous and sometimes is considered to be both superior and gifted. It can happen, but in at least one half of the cases the writer has studied the superior student is not also gifted.

IN ORDER to find out whether these apparent differences are widely observed a questionnaire, seeking definitions, was sent to, and returned by, 40 colleges and universities which had an enrollment of more than ten thousand students. The replies were

then classified and reduced to percentages for the two groups of students as shown in the following table:

Trait	Per Cent	
	Gifted Students	Superior Students
1. Good intelligence	60	40
2. Very high intelligence	65	35
3. Special talent	65	35
4. Broad interests	87	13
5. High natural learning aptitude	68	32
6. Fertile imagination	72	28
7. High motivation	23	77
8. Curiosity	73	27
9. Industrious	16	84
10. Individualistic	90	10
11. Conformist	15	85
12. Dynamic personality	12	88
13. Creative, abstract thinker	74	26
14. Excellent memory	61	39
15. Exhibits leadership	21	79

The gifted students excel, then, in these characteristics: both "good" and "high" intelligence; special talent; broad interests; high natural learning aptitude; fertile imagination; curiosity; individualism; creative, abstract thinking; and excellent memory. The superior student leads in high motivation, industry, conformity, dynamic personality, and leadership. According to the findings of this study, the distinctions between "gifted" and "superior" students are becoming apparent and may even be reduced to a measurement scale. There may be other traits which could be introduced but these fifteen do represent the major terms used in responding to the questionnaire study.

Another distinction must be observed. Superior students are aware of their superior performance, faculty members know of it, students' names are posted and often printed in college publications. The reverse is too often the case with the gifted student.

Who of us has not had the experience of telling a student that he has a natural gift which puts him at the top of the intelligence-quotient scale? Many of us have also heard the reply, "Well, I never knew that. No one ever told me." Can we imagine a superior student saying that? Hundreds of gifted youth enter our colleges every autumn, become immersed in the activities of campus life, and never differ conspicuously from the average, either in marks or personality traits.

Here we focus our attention on a significant problem. Should the highly gifted students be told that they possess unusual mental capabilities? A few schools have posted the top I.Q. scores, only

to find that some of their "brains" decided that they need not "crack a book" in order to keep ahead of others. This reaction, of course, was undesirable, and some of these schools, therefore, decided not to give out any of the scores.

Innate mental ability is a very personal affair, not transferable, sometimes unrecognized, not well understood, and subject to cultivation only by hard work. Moreover, its possession entails not only a personal but a heavy social responsibility. This view suggests that the gifted student should be told that he is gifted by someone who can at the same time convince him that his aim in life must be high. The counselor is obligated to see that the gifted student is aware of the responsibilities he bears to his family, to his school, and to society. If the student cannot afford a good college education, the counselor should aid him in an investigation of scholarships which are now abundantly available. Certainly this is a difficult assignment—one which calls for patience, skill, and many interviews. Of course these are important parts of the obligation of every college to its students; however, some colleges are so engaged in managing big classes that few staff members have time to consider the behavior of individual students, and too few know what to do about the gifted.

Now, more than ever, society needs persons who will exercise their native abilities in creativeness, in exploring the unknown, in being interested in asking "How?" and "Why?" and finding the answers. We have had a lot of experience with superior students but not enough with the gifted. There are thousands of gifted young people in our colleges, and many others who never get to college; but many of these are not recognized or, if we do locate them, are not understood and effectively stimulated.

Are we educators skillful enough to seek out such students and to encourage them? Undoubtedly we are, but we must visualize clearly the ways in which they differ and make effective plans for the cultivation of their minds. Neither aspect can be neglected. This calls for some new designs in higher education and considerable basic assistance.[1]

[1] The writer wishes to acknowledge deep appreciation for the encouragement in this research shown by the Office of Education, Department of Health, Education, and Welfare, Washington, D. C.

The Development of Pupil-Growth Criteria in Studies of Teacher Effectiveness

By HAROLD E. MITZEL AND CECILY F. GROSS

ALTHOUGH teachers are effective to the extent that they stimulate their pupils to achieve desirable educational goals, research workers have been slow to seize upon pupil growth toward these goals as a means of evaluating teaching performance. Compared with other studies of procedures for evaluating teachers, there have been relatively few investigations involving comparison between measured achievement of pupils before and after a period of instruction. The dearth stems in part from the difficulty of isolating the contribution of a single influence—the teacher—to the complex of pupil growth. Yet, despite the difficulty, analysis of the effect of the teacher upon growth of pupils is essential to the functions of teacher recruitment, training, selection, and promotion.

One purpose of this article is to review critically a single aspect of the published research in which measures of pupil growth have been developed as criteria of effective teaching. We propose to restrict our discussion to the logic and methods by which the growth criteria were developed in those studies attempting to differentiate teachers on the basis of their pupils' achievement. No effort will be made to examine the relationships which were sought between pupil growth and a large number of teacher characteristics. The authors have focused attention solely upon criterion development in recognition of the fact that the degree of reliance to be placed upon any relationships that may appear between predictors and criteria depends ultimately upon the adequacy of those criteria. For reasons which we shall attempt subsequently to justify, we have further confined our review to criteria developed in studies of pupil growth at the elementary- and secondary-school levels and have omitted consideration of several interesting investigations involving college students and trainees in the armed forces.

For a comprehensive survey of quantitative studies of teaching effectiveness dealing with research findings extraneous to the purpose of this report the reader is referred to the bulletin by Morsh and Wilder (20).[1] A thoughtful review of the literature

[1] The number in parentheses after an investigator's name refers to the bibliography at the end of this article (*see* pages 186–87).

pertaining to antecedent teacher variables related to pupil growth has been presented by Ackerman (1).

In addition to our review, we propose to present a number of issues basic to research in pupil growth, and to offer some suggestions for carrying out growth studies and interpreting results.[2] Although we have been concerned primarily with the development of growth criteria in the school setting, we believe that these issues and suggestions are also pertinent to research concerned with the outcomes of any interpersonal process designed to effect behavioral changes, including psychotherapy, industrial training courses, social case work, and the like. Our discussion of studies is organized roughly according to the method by which the development of the growth criterion was achieved: raw gain, achievement quotient, regression methods. Details concerning the studies are summarized in Table I.

RAW gain can be described as a method of obtaining a measure of pupil growth by substracting "before" from "after" scores or by substracting test scores from a pre-established standard. Baird and Bates (2) reported a study in which growth was estimated by comparing test scores with expectancy charts prepared by the Detroit Board of Education Research Department. A similar procedure was followed by Hill (12), using standards of growth set by the school administrators in the three midwestern cities in which the study was made. In a third study using the method of raw gain, Brookover (6) defined pupil growth as the difference between post-test and pretest scores.

THE achievement-quotient method is designed to adjust findings for differences in pupils' mental ability. Raw scores on achievement tests are converted into achievement ages by the use of normative tables. Sometimes the difference between initial achievement age and final achievement age is divided by mental age estimated from intelligence test scores to yield the achievement quotient. Sometimes initial and final scores are divided by the corresponding mental age. In some instances the gain index is computed only for class averages; in others, the ratios are determined for individual pupils.

One of the pioneer studies of pupil growth as a criterion of effective teaching was made by Lelah Crabbs (8). Her method

[2] The critique mentioned here will be published as a separate article in the November issue of the BULLETIN.

TABLE I

Summary of Quantitative Studies Involving the Development of a Pupil-Growth Criterion for Teacher Competency

Method and Investigator*	No. of Teachers	No. of Pupils	Grade Range	Ability Measured	Achievement Tests Employed
(1)	(2)	(3)	(4)	(5)	(6)
Raw Gain:					
Baird-Bates (2), 1929	571	...	1–3	Reading	Unspecified
Brookover (6), 1945	66	1,275	11	History	Indiana United States History Examination
Hill (12), 1921	135	...	Elem.	Arith., spell., penmanship	Unspecified
Regression Methods:					
Betts (4), 1935	54	1,214	4–8	Omnibus achievement†	Stanford Achievement Test
Gotham (11), 1945	57	404	7–8	Social studies†	*See* Rostker
Jayne (13), 1945	28	375	7–8	Social studies†	*See* Rostker
Jones (15), 1946	29	...	H.S.	Biol., civics, Eng., soc. sci., or gen sci.‡	Unspecified standardized tests
La Duke (16), 1945	34	200	7–8	Social studies§	Social Studies Questionnaire
Lins (17), 1946	17	...	H.S.	Biol., civics, soc. sci., English, or gen. sci.‡	Unspecified standardized tests
McCall (19), 1951	73	2,164	6	Omnibus achievement‖	McCall-Herring Comp. Ach. Test; 6 unpub. tests in ach., word knowl., soc. behavior, composition, penmanship
Riesch (21), 1949	22	258	7–8	Social studies¶	Townsend and Willis Coop. Soc. Studies Test, Washburn Soc. Adj. Inventory, Wood Right Conduct Test, Remmers' Scale for Measuring Attitude toward any Teacher
Rolfe (22), 1945	57	404	7–8	Social studies§	*See* Rostker
Rostker (23), 1945	28	375	7–8	Social studies§	Unit tests, Wrightstone soc. stud. tests, Hill civic att. and info. tests
Von Eschen (27), 1945	28	375	7–8	Social studies	*See* Rostker

TABLE I [*Continued*]

SUMMARY OF QUANTITATIVE STUDIES INVOLVING THE DEVELOPMENT OF A PUPIL-GROWTH CRITERION FOR TEACHER COMPETENCY

Method and Investigator*	No. of Teachers	No. of Pupils	Grade Range	Ability Measured	Achievement Tests Employed
(1)	(2)	(3)	(4)	(5)	(6)
Achievement Quotient:					
Barr, *et al.* (3), 1935.....	66	1,716	2–7	Omnibus achievement§	Stanford Achievement Test
Bimson (5), 1937.....	25	688	H.S.	Algebra, gen. sci., or Am. hist.	Cooperative Tests
Coy (7), 1930.....	26	461	3–6	Omnibus achievement	Stanford Achievement Test
Crabbs (8), 1925.....	...	1,800	3–8	Omnibus achievement§	Five standardized tests
Stephens and Lichtenstein (24), 1947.....	86	...	5	Arithmetic**	Unspecified
Taylor (25), 1930.....	105	1,968	4–8	Reading and arithmetic††	Woody-McCall Test of Arith. Fund., Thorndike-McCall Test of Reading Comprehension

* The number in parentheses after the investigator's name refers to the bibliography, pages 186–87.
† Interval of one year between testings.
‡ Interval of one semester between testings.
§ Interval of six months between testings.
|| Interval of eight months between testings.
¶ Interval of three months between testings.
** Interval of five months between testings.
†† Interval of four months between testings.

of analysis consisted of finding the accomplishment ratios for both the initial test and final test in each subject for each pupil. The difference between the initial and final accomplishment ratios yielded a measure of accomplishment-ratio change. When the change value was averaged for all the pupils in a given class, the result was considered to be the teacher's efficiency score in that particular subject. The five subject scores were combined according to a pattern of weights to form a composite efficiency score.

Barr and associates (3) used pupil growth as one of several criteria of teacher success. Three measures of gain were employed in the study: (1) raw gain on the complete Stanford Achievement Test, (2) raw gain in the arithmetic section of the Stanford battery, and (3) gain in terms of an accomplishment quotient. Pupil intelligence was measured by means of three different tests: the Detroit Primary Intelligence Test, the Otis Self-Administering Test of Mental Ability, and the Terman Test of Mental Ability. Significant differences in arithmetic gain were found among the classes in five different Wisconsin towns included in the study. The accomplishment quotient was also used by Bimson (5), Coy (7), and Stephens and Lichtenstein (24).

A THIRD statistical method used for deriving teacher criterion scores is the multiple regression technique, which is designed to adjust raw growth for learning ability and initial achievement. The differences between pupils' initial and final test scores are averaged for each class, and the class means are entered into a multiple regression equation as the dependent variable. The choice of independent variables differs from study to study. Average initial test score and intelligence quotient are variables most frequently employed.

Betts (4) used a multiple partial regression model for analyzing his data. He partialed out the effects of the class average initial Stanford Achievement scores and mean class age. No direct attempt was made to account for class differences in mental ability. Zero-order correlations of .915 between mean final achievement scores and mean class age and .981 between mean initial achievement and mean final achievement tend to support Betts' conclusion that scores on the Stanford battery reflect pupil maturation more than growth attributable to teacher ability.

Taylor (25) reported the results of a study carried out in nine

schools of a large city system. Like many investigators of pupil growth in studies conducted before 1930, the author intended primarily to validate supervisors' ratings of teachers by means of their pupils' progress in reading and arithmetic. As a standard measure of gain for each class, Taylor used the deviation of that class from the mean gain of all the classes in the city which were in the same half-grade. A correction was applied for increment in mental age over the four-month interval according to scores on the National Intelligence Test.

Perhaps the most ambitious study dealing with pupil growth criteria so far undertaken is the one reported by McCall (19). His measures covered eight separate functions about which knowledge of pupil growth was desired. The test battery was composed of the following:

1. Mental ability test
2. Comprehensive achievement test of general information
3. Omnibus achievement test in traditional subject-matter
4. Health and citizenship practices inventory
5. Word knowledge test
6. Social behavior (adjustment) test
7. Creative composition test
8. Handwriting test

Since the instruments used to measure these separate functions are not widely used in schools, it is difficult to judge their adequacy as operational definitions of the proposed variables. In order to arrive at a composite growth score for each of the 73 classes, McCall weighted the eight functions according to their judged importance in the hierarchy of educational goals in North Carolina. The weighted average growth scores for each class were then modified in two ways. One adjustment was made for the "capacity of each class to grow," based on an educational quotient derived by McCall's "line of relation" procedure (18). Another adjustment was undertaken to control the effect of class size upon pupil learning.

Regression equations were used in a number of investigations originating as doctoral dissertations at the University of Wisconsin under the sponsorship of A. S. Barr. In one of the series, Rostker (23) chose to measure social-studies achievement by means of three different tests with a total of eight parts. One two-part test covered the achievement of short-term objectives for two typical

units on "Safeguarding Public Health" and "Community Planning." Initial and final test forms were given three weeks apart. Each teacher was permitted to develop individual methods and materials covering four or five major subtopics in each unit. In addition, achievement over a six-month interval was measured by the three Wrightstone social studies tests developed for the Progressive Education Association and the three parts of the Hill civic attitudes and information tests. The eight achievement scores were used singly and in various combinations throughout the study.

Rostker found that the short-term unit tests and the Hill tests showed low reliabilities for initial, final, and change scores. The three Wrightstone tests, on the other hand, showed reliabilities for change scores ranging from .43 to .80. A unitary unadjusted criterion score was devised for each teacher by combining mean standardized pupil change scores on the three basic source tests. The weights assigned to each source (1, 7, 1) were roughly proportional to their separate reliabilities. The decision to combine the criterion change scores presumably was taken despite the low intercorrelations which clustered around .12. The reliability of the unit-Wrightstone-Hill composite post-test minus pretest scores was reported as .76. This reliability is slightly smaller than that for the best of the three Wrightstone tests, "Applying Generalizations to Social Studies Events."

In order to adjust class gain scores for varying levels of average initial score, Rostker employed smoothed regression curves of average gain over initial score for the unit-Wrightstone-Hill test composite and for each of the three source tests individually. The author subsequently reported a correlation of .94 between the raw unit-Wrightstone-Hill gain and the adjusted unit-Wrightstone-Hill gain of 24 classes. He concluded that no advantage accrued through the use of adjusted gain scores rather than raw gain scores. Studies reported by Jayne (13) and Von Eschen (27) are based on Rostker's data.

Similar procedures in criterion development were followed by Rolfe (22) in a replication of Rostker's investigation. In Rolfe's study, the independent variables in the regression equation were average initial test score, average mental age, average intelligence quotient, and average reading score. A predicted average pupil change was calculated for each of the 47 classes by using the weights from the multiple regression equation. By subtracting the

predicted average gain score from the actual average gain, Rolfe obtained a residual gain score which represented each teacher's effectiveness. Rolfe's pupil gain data were later used by Gotham (11).

La Duke (16) derived gain criteria by methods similar to those employed by Rolfe and Rostker. La Duke eliminated the three most deviant classes in the main analysis of the data in order to meet the assumption of homogeneity of variance underlying the *F* test.[8] Like several other investigators of this group, he found negative relationships between average pupil gain and initial test score which he attributed to the "ceiling effect" of the tests employed.

In still another Wisconsin study by Lins (17), a sample of 27 classes in biology, civics, English, social science, or general science were given initial and final standardized tests in their respective subjects. The mean raw score gain for each class was divided by the number of months between the testings to yield the average monthly raw score gain. The average raw score gains were then converted to standard scores for the classes in each individual subject. The average Henmon-Nelson mental age scores and the pretest achievement scores were also converted to z-scores. Multiple regression methods were employed to predict gain in achievement scores from the pretest achievement z-scores, mental age z-scores, and I. Q. z-scores. The residual gain, remaining after predicted gain was subtracted from the obtained gain, was considered to be a criterion of efficiency for each of the 17 teachers. Criteria for teachers with two or more classes were estimated by averaging residual gains. No evidence is given in the report of the significance of the beta weights for the independent variables in the multiple regression solution. Jones (15) has reported a study using the identical criterion scores developed by Lins.

Riesch (21) also drew upon Lins' work. He studied the correlates of pupil growth in social studies achievement, personality, social adjustment, conduct, and attitude toward the teacher using a criterion of teacher competence which he called "residual gain" but which he failed to define. One can only guess that his method of deriving the criterion was similar to that of Lins.

[8] The *F* test is that described by George W. Snedecor in his *Statistical Methods: Applied to Experiments in Agriculture and Biology*. 5th ed. (Ames, Iowa: Iowa State College Press, 1956), pp. 244–50.

BIBLIOGRAPHY

1. Ackerman, Walter I. "Teacher Competence and Pupil Change," *Harvard Educational Review*, XXIV (Fall, 1954), pp. 273–89.
2. Baird, James, and Bates, Guy. "The Basis of Teacher Rating," *Educational Administration and Supervision*, XV (March, 1929), pp. 175–83.
3. Barr, Arvil S.; Torgerson, Theodore L.; Johnson, Carl E.; Lyon, Vergil E.; and Walvoord, Anthony C. "The Validity of Certain Instruments Employed in the Measurement of Teaching Ability," in *The Measurement of Teaching Efficiency*, edited by Helen M. Walker (New York: Macmillan Company, 1935), pp. 73–141.
4. Betts, Gilbert Lee. "Pupil Achievement and the NS Trait in Teachers," in *The Measurement of Teaching Efficiency*, edited by Helen M. Walker (New York: Macmillan Company, 1935), pp. 144–237.
5. Bimson, Oliver H. "Do 'Good' Teachers Produce 'Good' Results?" *North Central Association Quarterly*, XII (October, 1937), pp. 271–76.
6. Brookover, Wilbur B. "The Relation of Social Factors to Teaching Ability," *Journal of Experimental Education*, XIII (June, 1945), pp. 191–205.
7. Coy, Genevieve L. "A Study of Various Factors Which Influence the Use of the Accomplishment Quotient as a Measure of Teaching Efficiency," *Journal of Educational Research*, XXI (January, 1930), pp. 29–42.
8. Crabbs, Lelah Mae. *Measuring Efficiency in Supervision and Teaching*. New York: Teachers College, Columbia University, 1925 (Teachers College, Columbia University Contributions to Education, No. 175). vii+98 pp.
9. Cureton, Edward E. "Validity," in *Educational Measurement*, edited by E. F. Lindquist (Washington, D. C.: American Council on Education, 1951), pp. 621–94.
10. Flanagan, John C. "Units, Scores, and Norms," in *Educational Measurement*, edited by E. F. Lindquist (Washington, D. C.: American Council on Education, 1951), pp. 695–763.
11. Gotham, R. E. "Personality and Teaching Efficiency," *Journal of Experimental Education*, XIV (December, 1945), pp. 157–65.
12. Hill, C. W. "The Efficiency Ratings of Teachers," *Elementary School Journal*, XXI (February, 1921), pp. 438–43.
13. Jayne, C. D. "A Study of the Relationship between Teaching Procedures and Educational Outcomes," *Journal of Experimental Education*, XIV (December, 1945), pp. 101–134.
14. Johnson, Palmer O., and Jackson, Robert W. B. *Introduction to Statistical Methods*. New York: Prentice-Hall, Inc., 1953. xx+357 pp.
15. Jones, Ronald DeVall. "The Prediction of Teaching Efficiency from Objective Measures," *Journal of Experimental Education*, XV (September, 1946), pp. 85–99.
16. La Duke, C. V. "The Measurement of Teaching Ability: Study Number Three," *Journal of Experimental Education*, XIV (September, 1945), pp. 75–100.

17. LINS, LEO JOSEPH. "The Prediction of Teaching Efficiency," *Journal of Experimental Education*, XV (September, 1946), pp. 2–60.
18. MCCALL, WILLIAM A. *Measurement*. New York: Macmillan Company, 1939. 535 pp.
19. MCCALL, WILLIAM A. *Measurement of Teacher Merit*. Raleigh, North Carolina: State Superintendent of Public Instruction [1952], (Publication No. 284). 40 pp.
20. MORSH, JOSEPH A., AND WILDER, ELEANOR W. "Identifying the Effective Instructor: a Review of the Quantitative Studies, 1900–1952." Chanute Air Force Base, Illinois: Training Aids Research Laboratory, Air Force Personnel and Training Research Center, Air Research and Development Command, 1954 (*Research Bulletin*, AFPTRC-TR-54-44, October, 1954). 158 pp.
21. RIESCH, KENNETH PETER. "A Study of Some Factors in Pupil Growth," *Journal of Experimental Education*, XVIII (September, 1949), pp. 31–55.
22. ROLFE, J. F. "The Measurement of Teaching Ability: Study Number Two," *Journal of Experimental Education*, XIV (September, 1945), pp. 52–74.
23. ROSTKER, L. E. "The Measurement of Teaching Ability: Study Number One," *Journal of Experimental Education*, XIV (September, 1945), pp. 6–51.
24. STEPHENS, J. M., AND LICHTENSTEIN, ARTHUR. "Factors Associated with Success in Teaching Grade Five Arithmetic," *Journal of Educational Research*, XL (May, 1947), pp. 683–94.
25. TAYLOR, HOWARD RICE. "Teacher Influence on Class Achievement: a Study of the Relationship of Estimated Teaching Ability to Pupil Achievement in Reading and Arithmetic," *Genetic Psychology Monographs*, VII (February, 1930), pp. 81–175.
26. THORNDIKE, ROBERT L. *Personnel Selection: Test and Measurement Techniques*. New York: John Wiley and Sons, Inc., 1949. 358 pp.
27. VON ESCHEN, C. R. "The Improvability of Teachers in Service," *Journal of Experimental Education*, XIV (December, 1945), pp. 135–56.

Johnny Appleseed: a Pilot Study of a Story-Centered Activity Program

By META NEWMAN

THE purpose of this paper is twofold: to describe the organization of a "core curriculum" program carried out in a class for mentally retarded adolescents; and to evaluate its results. The children involved in the experiment, eight girls and four boys, were all members of the oldest group in the Greene County School for Mentally Retarded Children, Yellow Springs, Ohio. Their ages ranged from twelve to eighteen and a half. Intelligence quotients varied from 38 to 51. Etiological make-up of the group was heterogeneous.

Martens,[1] Delp,[2] Hill,[3] and other contributors to the field stress the point of view that the school curriculum for the mentally deficient must be both practical and meaningful to the individual in order for learning to take place. The writer has observed, however, that there is the tendency to underestimate what can be meaningful to the retarded child. Programs for this group often overemphasize the practical aspects of life to the exclusion of the creative, sensory, and spontaneous areas of experience. As a result, the learning experiences of these children are meager and monotonous.

The writer felt that the use of challenging and interesting subject-matter in the classroom could serve as a provocative agent for enabling the children to cultivate fuller potentialities intellectually, creatively, and emotionally. To this end, it was decided to provide the children in the Greene County School with a story-centered "core curriculum" program based on the historical-legendary figure of Johnny Appleseed. For the purposes of this study the term *core curriculum* means the correlation of subjects into a meaningful whole. The regular academic subjects are to be regarded as tools by which the children build up an understanding of a particular theme.

Johnny Appleseed, born John Chapman, was considered an appropriate theme for this group because (1) he was an actual

[1] Martens, Elise H. *Curriculum Adjustments for the Mentally Retarded.* Washington, D.C.: Federal Security Agency, 1950 (U.S. Office of Education, Bulletin 1950, No. 2).

[2] Delp, Harold A. "Curriculum Problems with the Mentally Retarded," *Training School Bulletin,* XLIX (December, 1952), pp. 187–203.

[3] Hill, Arthur S. *The Severely Retarded Child Goes to School.* Washington, D.C.: Federal Security Agency, 1952 (U.S. Office of Education, Bulletin 1952, No. 11).

person; (2) there is a rich body of folklore based upon his adventures; (3) the philosophical views held by Chapman reflect, to an extent, the values we try to impart to the youngsters, such as kindness toward others and respect for the living, both plant and animal; (4) John Chapman made extensive plantings in the section of the country where these children live; and (5) the children are all familiar with apples and therefore concepts centered around apple-plantings, apple-cookery, and the like are within the realm of their experiences.

Pollock and Pollock[4] suggest that the story form is the most satisfactory method of presenting history to the retarded child. In keeping with this, all historical information about Johnny Appleseed was presented to this group by a professional storyteller.[5] After much careful research and planning, six twenty-minute sessions were prepared. Within the framework of both the facts and fancies set down about John Chapman, the events of these stories were all possible.

Organization of the project, scheduled for three school weeks, adhered to the following outline:

1. The Language Arts
   a) Listening to stories based on adventures of Johnny Appleseed, from birth to death[6]
   b) Story writing for more advanced pupils
2. Academic Activities
   a) Reading materials, number work, and science experiments designed for level of the group centered around the theme
3. Dramatic Arts
   a) Early American dances
   b) Dramatization of the stories
4. Plastic and Graphic Arts
   a) Relief map of the general locale
   b) Clay modeling of Johnny Appleseed
   c) Drawings and paintings of Johnny Appleseed, apple orchards, and so on
   d) Group mural

[4] Pollock, Morris P., and Pollock, Miriam. *New Hope for the Retarded: Enriching the Lives of Exceptional Children.* Boston: Porter Sargent, 1953, Chapters V, VI, XI.

[5] The writer's thanks are extended to Barbara Webb for assistance in the research and storytelling presentations.

[6] Titles and order of story presentation were as follows: (1) John Chapman Plants Apple Trees and Earns a New Name; (2) Johnny Appleseed's Travels and the Hats He Wore; (3) Johnny Appleseed Takes a Lost Child Back to Her Covered Wagon Home; (4) Johnny Appleseed, His Horse Becky, and a Lot of Other Animals; (5) The Indians Called Johnny Appleseed a Medicine Man; (6) Good-bye Johnny Appleseed.

5. Home Arts
   a) Peeling and coring the apple
   b) Preparation of apple dishes
   c) Exploration of the uses of the apple
6. Social Arts
   a) Games centered around the theme
   b) Dramatic activities
   c) Termination of the project by a Johnny Appleseed party planned by the children.

THE results of this experiment have shown that the use of the "core curriculum" approach enabled the children to internalize and expand upon material with a greater degree of spontaneity and creativity than was possible through the more formal procedures of drill and repetition. The results seem significant in that they reveal that the mentally handicapped, if properly stimulated, are capable of responding to all aspects of a given project.

In the area of the language arts, for example, I observed that all members of the group, even those at the lowest intellectual level, were able and, indeed, eager to follow the narrative line of these stories. The children, who were encouraged to write their own Johnny Appleseed stories, found that simple storywriting provided them with a new mode of communication. At first, the group composed stories together. The plots of their early stories followed the narrative line of the stories presented by the storyteller. In effect, the children repeated their stories in their own words with slight, if any, attempt at creating new ideas. Schaefer-Simmern[7] discusses this tendency toward perseveration in the graphic arts. His theory—that repetition of subject continues until the retardate is familiar and secure with the materials and facts—seems to be applicable to this area. Once the children felt secure in dealing with the subject-matter, they began to experiment and expand. The final result was that the youngsters began to write original Johnny Appleseed stories independent of each other and of all teacher help. The success of their stories gave them a new sense of importance and adequacy.

The following story was written by an eighteen-and-a-half-year-old girl, I.Q. 48:

[7] Schaefer-Simmern, Henry. *The Unfolding of Artistic Activity: Its Basis, Processes, and Implications.* Berkeley, California: University of California Press, 1948, pp. 33–67.

JOHNNY APPLESEED

Johnny saw 4 animals. One animal was a kangaroo. One was a crocodile. And two animals was a owl and a dog.

He liked the animals.

He had 2 apples.

He cut the apples in half.

He gave the apples to the animals.

This showed the animals he wanted to be friends.

The animals took the seeds out of the apples.

Now the animals knew how to eat apples.

He showed them how to play.

He went out with the animals. They were happy animals. And Johnny Appleseed was happy too.

This is the story of Johnny Appleseed and the animals.

This story is just one example of the spontaneous and creative thinking carried out by members of the class.

Prior to this project, only the most immature and uninhibited children in the class willingly participated in dramatics, but the interest that the children developed in the theme seemed to transcend their inhibitions so that practically all members of the group were anxious to participate. The dramatizations of the stories strengthened their knowledge of Johnny Appleseed. Repetition of the facts, through drama, gave the members of the group direction and enabled them to participate in sustained imaginary situations.

In the area of the graphic arts, I have frequently found that children of limited intellectual ability are often frustrated by the blank sheet of paper at the easel board. They are baffled by the teacher's request to "go ahead and paint." Providing the children with a provocative theme, in this case Johnny Appleseed, stimulated them and supplied an idea. Pictorial depiction thus became still another way of organizing and reviewing what the group had learned.

A group mural, designed and executed by the entire class, afforded the opportunity for co-operative interaction. Co-operation grew as a result of the communal interest. The mural also offered the children the opportunity to share their ideas and information about Johnny Appleseed.

This experiment has attempted to show a method of expanding curricular horizons for the mentally retarded. Perhaps it is not possible for retardates to delve deeply into an interest; however, they can be aided in broadening their knowledge and experiences.

In a heuristic study of this type, it is admittedly difficult to arrive at any definite conclusions. Nevertheless, I believe that this approach could be used with equal success in more of our classrooms. The story-centered activity program has revealed that the mentally deficient child can be taught to react and think spontaneously. Intellectual retardation need not mean intellectual poverty.

[Vol. XXXVII, No. 7]

* * *

More than 600 teachers from the United States and 42 other countries are taking part in the 1958–59 teacher exchange program, according to Lawrence G. Derthick, United States Commissioner of Education. With this year's exchange, nearly 5,000 teachers from the United States and 64 other countries will have participated in the program, which is now in its thirteenth year.

On August 8, 100 American teachers from 26 states left New York to exchange positions with 100 teachers from the United Kingdom who arrived in New York on August 12. An additional 68 teachers from Australia, Austria, Belgium, Canada, Chile, Cuba, France, Germany, Italy, the Netherlands, New Zealand, and Norway arrived in the United States in August for a year of teaching in American schools. An equal number of American teachers went abroad for classroom duty.

The program is part of the United States International Educational Exchange program of the Department of State and is arranged by the Office of Education, Department of Health, Education, and Welfare.

EDITORIAL COMMENT

The Passing of a Colleague

MANY readers of the EDUCATIONAL RESEARCH BULLETIN must have experienced a sense of personal as well as professional loss when they read the announcement last month of the passing of Ruth E. Seeger, research librarian in the Bureau of Educational Research and Service.

Miss Seeger was born at Hampton, Iowa, December 24, 1897. She attended Ellsworth College and received the Bachelor of Arts degree in 1923. For one year she was a teacher of English in the Union Township High School, at LeMars, Iowa. In 1925–26, she attended the St. Louis Library School, from which she received a Library Certificate. In 1926 she joined the staff of the Bureau of Educational Research at Ohio State University, as a bibliographical assistant; she continued as a member of this Bureau and its successor, the Bureau of Educational Research and Service, until her death. From 1946 to 1950, she was research librarian; from 1950 to 1956, research librarian and instructor; and from 1956, research librarian and assistant professor. She was a member of the Tenth Avenue Baptist Church, the American Library Association, and the Ohio Library Association. She was past president of Chapter V of the P.E.O. Sisterhood, an international organization devoted to promoting the education of women.

She was a highly competent reference librarian. The research library that she directed is widely known as one of the finest of its kind. She developed one of the best collections of educational research reports in the country. Her skill in locating educational materials and data was known far and wide. In one recent year, in response to special requests, she compiled forty-eight bibliographies, averaging fifty entries each. Of these requests, twenty-four came from the staff of the Bureau, four from other faculty members in the College of Education, one from a faculty member outside the College, eleven from professional workers in Ohio, and eight from workers outside the state.

Readers of the BULLETIN will recall her articles and book reviews in this magazine. In addition, she was author or joint author of a number of published bibliographies, of which the most recent is *Writings by and about Boyd H. Bode* (1951). Her

last published writing, except for one book review, is *Using Library Resources in Educational Research* (1957), a very useful distillation of her experience over three decades in helping students of educational problems.

Less conspicuous, but not less important than this written and published work, was the individual help she gave to the scores of persons who used the library every day. Her effectiveness in this was due, not only to her exceptional skill as a reference librarian, but also to her personal qualities. She was quiet and self-effacing, wholeheartedly devoted to her work, and always ready to help. Thousands of persons, many of them in important educational positions, have reason to be grateful for the assistance they received from her.

The writer numbers himself among these thousands. It was both an important professional benefit and a deep personal satisfaction to be closely associated with her for so many years.

R. H. E.

New Staff Members in the Bureau

We are happy to welcome four new members to the professional staff of the Bureau of Educational Research and Service. The first is Egon G. Guba, who on July 1 began his work as research associate and associate professor. He is a specialist in educational research. He did his undergraduate work at Valparaiso University and his graduate work at the University of Kansas (M.A.) and the University of Chicago (Ph.D.). He has been an instructor in mathematics and physics at Valparaiso, instructor and assistant professor of education at the University of Chicago, and associate professor of education at the University of Kansas City.

In 1951–53 he was research associate in the United States Air Force Instructor Research Project, and in 1955–57, research consultant to the Midwest Administration Center of the University of Chicago. He has also been a research associate of Community Studies, Inc., of Kansas City, Missouri, and consultant in the Gifted Adolescent Project conducted at the University of Chicago under the auspices of the United States Department of Health, Education, and Welfare.

In these research positions he wrote proposals, developed designs, devised and adapted instrumentation, gathered and analyzed data, and wrote summary reports. He has been active in a number of professional organizations and has made numerous contributions to the literature of educational research.

In the Bureau he is head of the Division of Educational Research. In addition to carrying on research individually and in collaboration with others, he will direct the work of graduate students and serve as a consultant to faculty members and students on research design and related matters. He will be the principal research consultant to the editorial staff of the BULLETIN.

The second person to join the Bureau was Eunice G. Lovejoy, who on September 8 succeeded Ruth E. Seeger as research librarian. Mrs. Lovejoy did her undergraduate work at Marion College and Madison College. She received her library training in the School of Library Science at the University of North Carolina, from which she received the degree B.S. in Library Science. She has carried a wide variety of library responsibilities at Goucher College, Rockingham Public Library (Harrisonburg, Virginia), Lynchburg College, and the University of North Carolina. During the past summer she was assistant librarian in the Education Library at Ohio State.

The third of the newcomers is Shirley Lipson, who on October 1 began work as assistant editor and instructor. Miss Lipson received her Bachelor's and Master's degrees in English at the University of Pittsburgh, and has completed about a year's work beyond the Master's degree toward a doctorate in the same field. She has been editorial assistant in the Bureau of Business Research at Pittsburgh. In the Bureau she will be assistant editor of the BULLETIN and of other publications of the College of Education and the Bureau.

The fourth new staff member is Ellyn G. Lauber, who is an instructor in the division of special education.[1] Miss Lauber received her Bachelor's and Master's degrees at Ohio State University, with specialization in the teaching of slow-learning children. She has been a teacher in a private school in Michigan, the public schools of Cleveland, Ohio, and the Training School at Vineland, New Jersey. She has served as research assistant in the

[1] Miss Lauber fills the vacancy created by the resignation of Assistant Professor Harold R. Phelps, who is now at Illinois State Normal University.

United States Department of Health, Education, and Welfare, and as director of education at the Edward R. Johnstone Training and Research Center, at Bordentown, New Jersey.

We look forward with pleasure to working with our new colleagues.

R. H. E.

A Correction

THE executive secretary of the Alexander Graham Bell Association for the Deaf, Inc., Mary R. Van Wyk, has drawn Mr. Schowe's attention to an error in his article "Some Observations on Sign Language" in the EDUCATIONAL RESEARCH BULLETIN dated May 14. The statement in the first three lines of page 124 is wrongly ascribed to Alexander Melville Bell. The footnote is also wrong. The statement is implied in the testimony of Alexander Graham Bell before the Royal Commission of the United Kingdom on the Condition of the Blind, the Deaf and Dumb, etc., and in two articles submitted at the time by Dr. Bell as exhibits. These were published by the Volta Bureau in *Education of Deaf Children*[1] (*see* Part II, pages 26, 150, 159).

Mr. Schowe, however, is not altogether to blame. He used a reference which had appeared in two publications.

* * *

ACCORDING to a recent announcement of the United States Civil Service Commission, applications are being accepted for Education Research and Program Specialist positions with the Office of Education, in Washington, D.C., and throughout the United States. The salaries range from $5,440 to $11,610 a year.

Appropriate education and professional experience in the field of education are required. Graduate study may be substituted for the required experience for positions paying $5,440 a year, and for part of that required for the higher levels.

Full information regarding the requirements and procedures for application may be obtained at many post offices throughout the country, or from the United States Civil Service Commission, Washington 25, D.C. Applications will be accepted by the Board of United States Civil Service Examiners, Office of Education, Washington, D.C., until further notice.

[1] Edited by Joseph C. Gordon. Washington, D. C., 1892.